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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yusuke Toyoda

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EXAMINER

SHEVIN, MARK L

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1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/518,151	Applicant(s) TOYODA ET AL.	
	Examiner Mark L. Shevin	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claims 1-3 and 5-9 filed June 18th, 2008, are currently under examination. Claim 3 was cancelled, claim 1 was amended, and claims 5-9 are new.

Status of Previous Rejections

- 2.. The previous rejection of claims 1-4 under 35 U.S.C. 103(a) in the Office action dated February 20th, 2008 have been withdrawn in view of Applicants' amendments to claim 1.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-3 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The instant specification only discloses that the sum of titanium and zirconium should be greater than 0.3 wt% and nowhere discusses the advantages of such a sum being greater than 0.5 wt% nor a specific example thereof.

Claim Rejections - 35 USC § 103

4. **Claims 1, 6, and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Winkler** (EP 918095 A1).

Winkler:

Winkler discloses a die-cast aluminum alloy with alloying additions that overlap each and every claimed range in instant claim 1 as shown in the table below (Abstract):

Element	Winkler	Instant Claim 1	Overlap
Mg	0 – 5	3.5 – 4.5	3.5 – 4.5
Mn	0.1 – 1.6	0.8 – 1.5	0.8 – 1.5
Si	0 – 0.5	0 – 0.5	0 - 0.5
Fe	0 – 1.0	0 – 0.5	0 – 0.5
Ti	0 – 0.3	0.2 <	0.2 – 0.3
Zr	0.1 – 0.4	0.3 <	0.3 – 0.4
Ti+Zr	0.1 – 0.7	Ti+Zr > 0.5	0.5 – 0.7
Al	Balance	Balance	Balance

Regarding claims 1, 6, and 8, From MPEP 2144.05, para. 1: In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

While Winkler does not teach a specific sum or ratio of titanium to zirconium, however:

It would have been obvious to one of ordinary skill in aluminum casting, at the time the invention was made, taking the disclosure of Winkler as a whole, to work within the disclosed range of titanium and zirconium to yield an optimal toughness. Put another way, it would have been obvious to one of ordinary skill in the art at the time of the invention to choose the instantly claimed ranges through process optimization, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (MPEP 2145.05 para. II). See *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Malagari* 182 USPQ 549 and *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

In addition, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, *In re Cooper and Foley* 1943 C.D. 357,553 O.G. 177., 57 USPQ 1 17, *Taklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77, and *In re Pilling*, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those ordinary skilled in the art. *In re Austin, et al.* 149 USPQ 685,688. It would have been obvious to one of ordinary skill in the art to select alloy compositions fulfilling the claimed compositional relationships from the alloy compositional ranges disclosed by Winkler.

5. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Winkler** as applied to claims 1, 6, and 8 above, in further view of **Komazaki** (US 2002/0141896).

Winkler does not teach the pouring or casting temperatures that were used to form the die-cast products of his invention, one must resort to a second reference to aid this deficiency.

Komazaki teaches an Al-Mg-Mn alloy with compositions that overlap those of claim 1 (Abstract) and produces die-cast test pieces at a casting temperature of $720\pm 10^{\circ}\text{C}$ (para 0025).

Thus it would have been obvious to one of ordinary skill in aluminum casting, at the time the invention was made, to form a die-cast product in the instantly claimed temperature range as Komazaki taught this temperature for an almost identical Al-Mg-Mn alloy as both instant claim 1 and the alloy of Winkler.

6. **Claims 3, 5, 7, and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Winkler** as applied to claims 1, 6, and 8 above, in further view of **Spanjers** (US 2002/0006352 A1).

Winkler does not teach a die-cast product with chill layers such as the sum of the thickness of the chill layers divided by the minimum thickness is 18% or greater.

Spanjers:

Regarding claims 3, 5, 7, and 9, Spanjers teaches an Al-Mg alloy that overlaps the composition ranges of claim 1 and furthermore Zr and Ti are present in Spanjers in the new range of 0.1 to 0.3 wt% of claim 4. This alloy was produced in the form of thin plates of 200x250x2 mm.

It would have been obvious to one of ordinary skill in aluminum casting, at the time the invention was made, to produce a die-cast aluminum casting with a thickness of 1.2 to 3 mm and a ratio of chill layer thickness to total plate thickness as claimed as Spanjers taught a specific example of a die-cast plate to illustrate castability. Spanjers does not teach a given ratio of chill layers to minimum thickness but the Examiner holds that these chill layer limitations are not patentable over the prior art of record as one of ordinary skill in the art would certainly be able to optimize the thickness of the product and its chill layers in the normal course of initial die-casting and testing to obtain a maximally ductile and tough product as Spanjers teaches that by optimizing the casting parameters, the tensile and elongation properties can be improved (para 0052) and furthermore that the thinner 2 mm plates had more defects than the 4 mm plates (para 0063), thus implicating the thickness of the plates as a condition for optimization.

Furthermore, one of ordinary skill would reasonable expect substantially the same properties from such a product as in both the instant specification and Spanjers, substantially similar alloys were successfully die-cast in preheated molds to form thin plates with a flow distance of at least 200 mm. One of ordinary skill would know that as the cross-section (thickness) of the desired plate product decreases for a given die-casting operation, the ratio of chill layers to overall thickness will increase and that chill layers will generally have finer grain size and thus higher toughness and elongation properties from basic microstructure – property relationships known in materials science.

From MPEP 2112, para. V, subpara 1: "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on 'inherency' under 35 U.S.C. 102, on '*prima facie* obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same..."

Response to Applicant's Arguments:

7. Applicant's arguments filed June 18th, 2008 have been fully considered and are persuasive in view of the amendments to the claim 1.

The Examiner has issued new rejections as necessitated by amendment and has used the Spanjers reference once again, this time as a secondary reference. To this extent the Examiner disagrees with Applicants' assertion that Spanjers explicitly teaches against having particular weight percents of Ti and Zr.

Spanjers teaches that Zr levels above 0.3 wt% tend not to have further advantages in the context of achieving strength improvement and weldability (para 0043). Spanjers does not teach that an essential property of his invention is harmed or even lessened by moving above 0.3 wt%. As for Ti, only a preferred range is stated in para 0047 and no consequences of moving outside of that range are mentioned.

Under the proper legal standard, a reference will teach away when it suggests that the developments flowing from its disclosures are unlikely to produce the objective of the applicant's invention. In re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994). A statement that a particular combination is not a preferred embodiment does not teach away absent clear discouragement of that combination. In re Fulton, 391 F.3d at 1199-1200.

Art Unit: 1793

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

-- Claims 1-3 and 5-9 are finally rejected

-- No claims are allowed

The rejections above rely on the references for all the teachings expressed in the texts of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the texts of the references. To emphasize certain aspects of the prior art, only specific portions of the texts have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

All recited limitations in the instant claims have been met by the rejections as set forth above. Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588 and fax number is (571) 270-4588. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy M. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Mark L. Shevin/

Examiner, Art Unit 1793

/Roy King/

Application/Control Number: 10/518,151

Page 9

Art Unit: 1793

Supervisory Patent Examiner, Art Unit 1793

September 8th, 2008

10-518,151